

Capstone Project Presentation:

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Intro:

- Toronto is Canadian city located on lake Ontario, being one of the worlds most developed cities it can be expected that its citizens have some of the greatest access to goods and services in the world. Yet COVID-19 has made this access more important then ever, for the elderly its about making safe decisions(essential establishments only) and for the youth its about finding places to socialize outside of at home work(Supporting establishments). This means that the demographics of certain areas may change if there is a great enough relative difference based on the accessibility to their desired goods.

Business Problem

- Neighbourhood planners, investors, government officials, people in the property market and those at risk to severe COVID-19 may all find use in this data. Not only will it allow for better forward planning and greater insights for future property investments but it could help a great deal of people to drive to locations where they are best able to have their needs met whilst still being able to choose the less crowded establishment.

Data:

- Data Used:
 - Toronto,Canada Neighbourhood Data;
 - Venue data for essential shopping locations+Longitude/Latitude data for each respective location.
 - Source: 4Square API:Location data , Geocoder package:Geolocation data.

Essential Establishments:

- 'Airport', 'Bank', 'Convenience Store', 'Fast Food Restaurant', 'Fish & Chips Shop', 'Food & Drink Shop', 'Grocery Store', 'Pharmacy', 'Supermarket', 'Warehouse Store', 'Clothing Store', 'Deli / Bodega'

Supporting Establishments:

- 'Arts & Crafts Store', 'Bakery', 'Bar', 'Baseball Field', 'Boutique', 'Breakfast Spot', 'Brewery', 'Café', 'Chinese Restaurant', 'Coffee Shop', 'Cosmetics Shop', 'Creperie', 'Department Store', 'Dessert Shop', 'Dog Run', 'Fast Food Restaurant', 'Field', 'Fish & Chips Shop', 'Gastropub', 'Gym', 'Hakka Restaurant', 'Hockey Arena', 'Home Service', 'Hotel', 'Ice Cream Shop', 'Intersection', 'Italian Restaurant', 'Japanese Restaurant', 'Jewelry Store', 'Liquor Store', 'Massage Studio', 'Motel', 'Park', 'Piano Bar', 'Pizza Place', 'Playground', 'Plaza', 'Rental Car Location', 'Restaurant', 'River', 'Sandwich Place', 'Skating Rink', 'Sports Bar', 'Theme Restaurant', 'Toy / Game Store', 'Trail', 'Vegetarian / Vegan Restaurant', 'Wings Joint', 'Yoga Studio', 'Burger Joint'

Methadology:

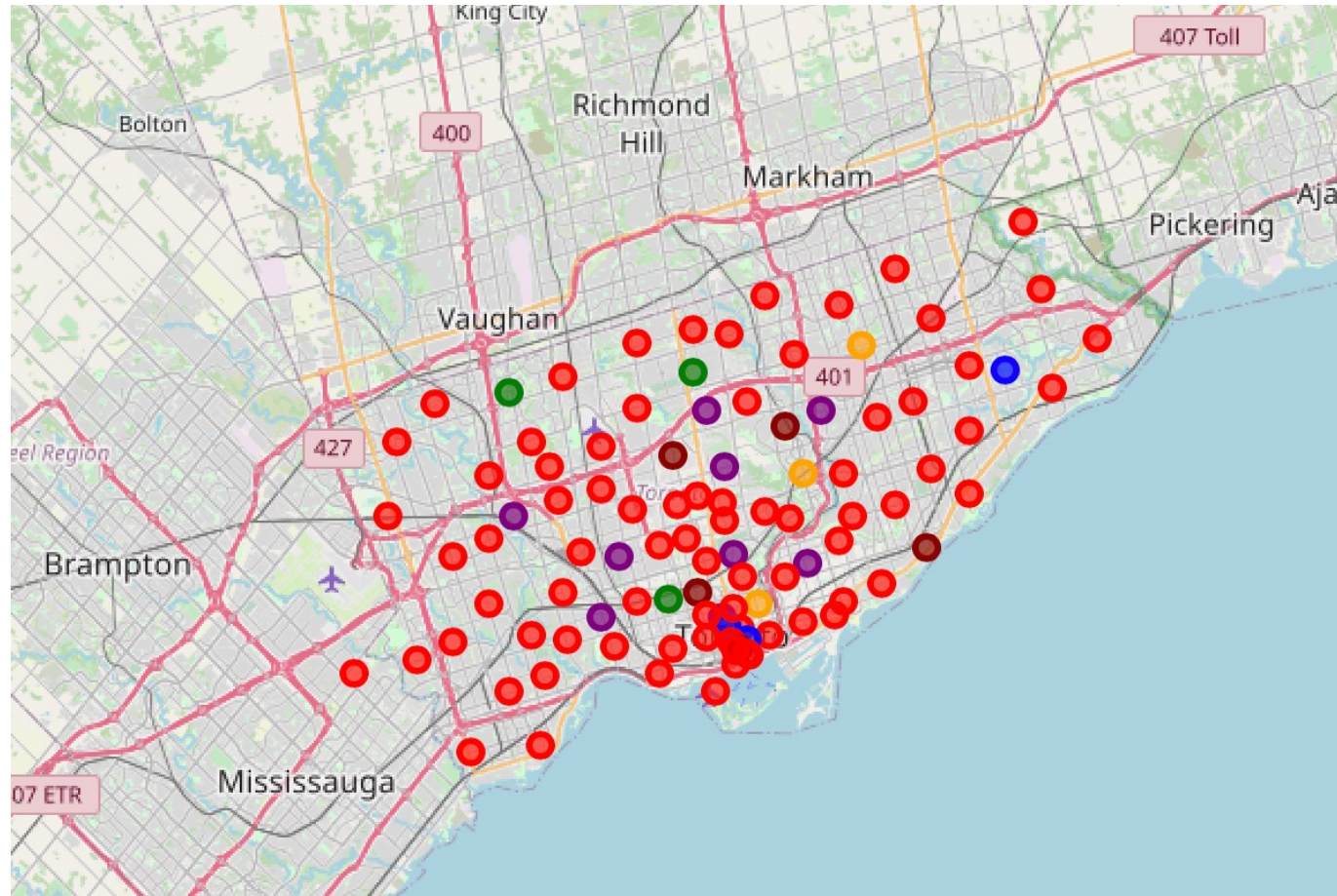
1. Import data:

1. Neighborhood
2. Longitude and Latitude of each Neighborhood
3. Top 10 Venues in 750m radius
4. Essential Establishments removed from Supporting establishment dataframe
5. Supporting Establishments removed from Essential establishment dataframe
6. K-Means clustering
7. Analysis.

Results:

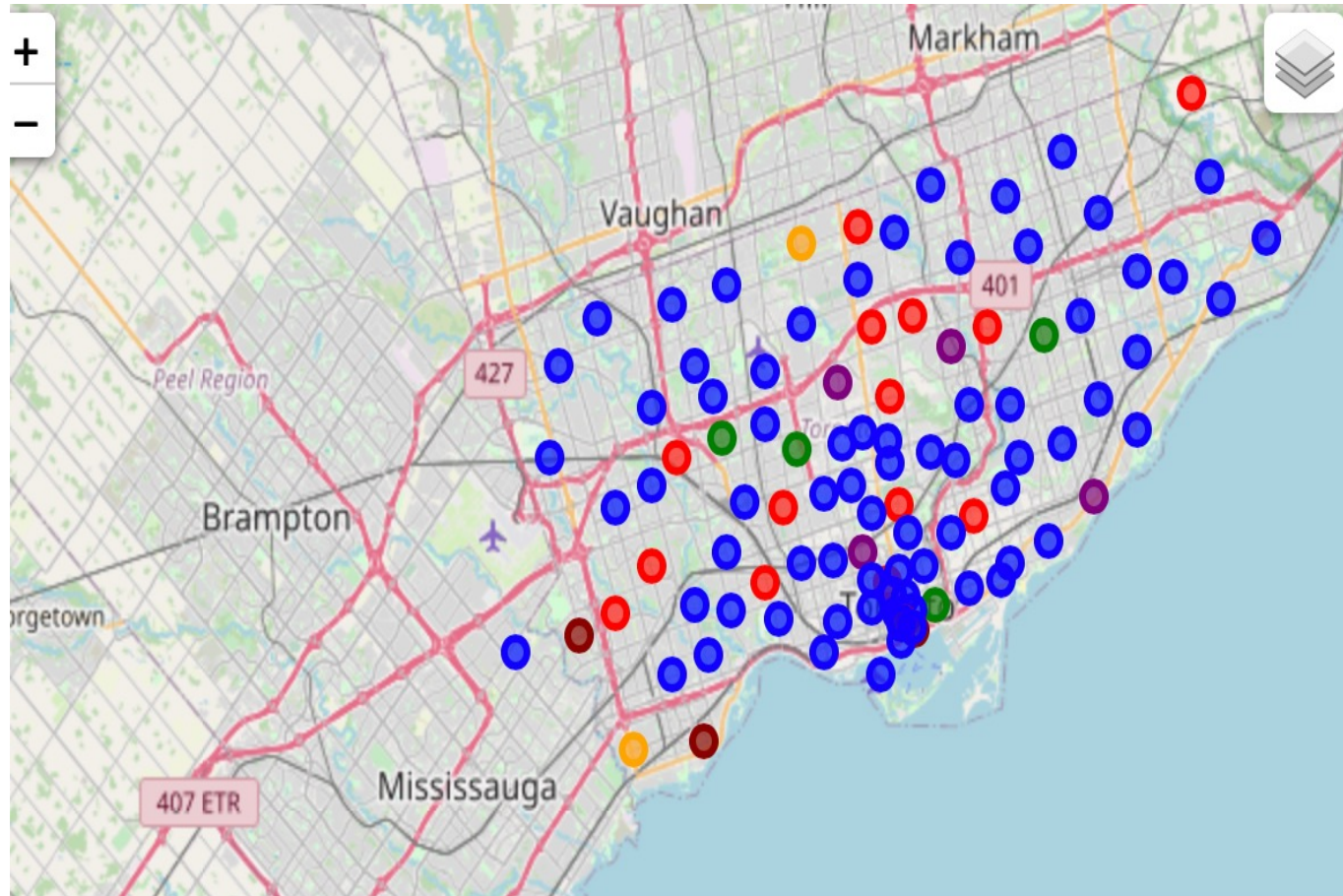
- The results of the analysis indicate that there are clear differences between the availability of Essential and Supporting establishments in the Neighborhoods in and around Toronto:

Combined:



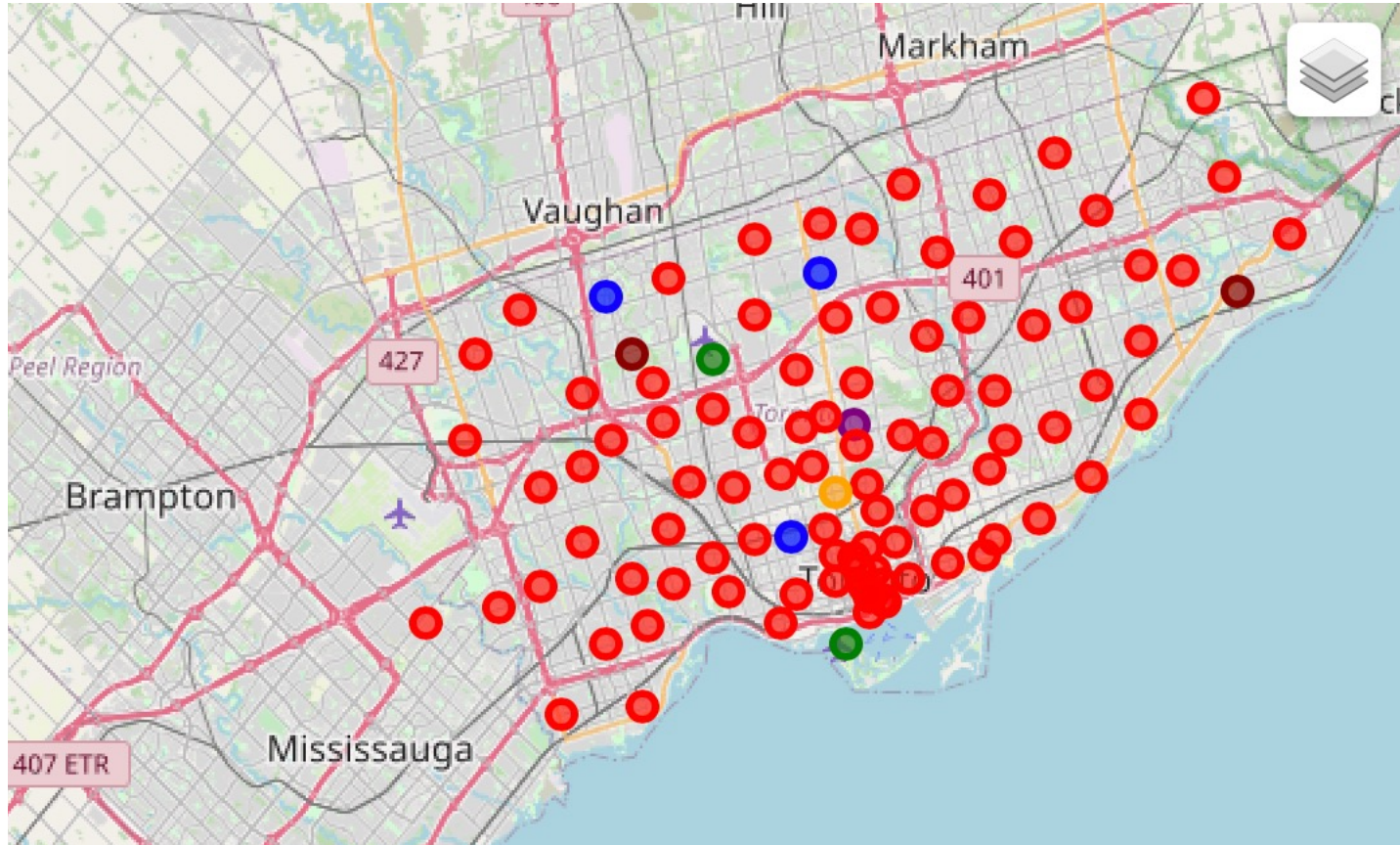
- No discernable trend as the clusters appear to be evenly dispersed amongst the Neighborhoods

Supporting Establishments:



- Clusters appear to change based on their proximity to Toronto city center
- Younger persons prefer living closer to city center

Essential Establishments:



- Access to essential establishments is limited in and around the city center.
- Greater level of variation, with more concentrated locations.
- Older persons should favor of locations in Green and Purple areas.
- Essential Establishments concentrated around airports.

Conclusion:

- Significantly different access to essential and supporting establishments based on proximity to city center or proximity to airport.
- Based on analysis going forward younger/not at risk of severe COVID-19 symptoms may prefer living closer to Toronto city center, whilst older persons may favor living outside of the city or near an airport.
- Ultimately this report estimates a greater level of migration of youth towards the city center and greater number of elderly persons moving outside of the city.